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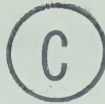
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AN EVALUATION OF RELAXATION
IN ANXIETY RESOLUTION

BY



KINGSLEY PAYNE

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "An Evaluation of Relaxation in Anxiety Resolution," submitted by Kingsley Payne, in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

The study was designed to evaluate the efficacy of systematic relaxation procedures in the resolution of anxiety. The Willoughby Schedule, a measure of what Wolpe terms "persistent unadaptive anxiety reactions" was administered to 105 university students. On the basis of the responses, an experimental group of 22, approximating the distribution of the larger group with respect to the anxiety measure was selected. A control group, matched for sex, age and degree of anxiety, as measured by the Willoughby Schedule, was also selected. Both groups were then administered Cattell's Anxiety Scale Questionnaire and Galvanic Skin Response readings were noted. The experimental group was systematically schooled in relaxation techniques during three half-hourly sessions extending over a three week interval. At the end of the treatment period the experimental group, in distinct contrast to the control group, exhibited a significant decrement in anxiety as measured by all three indices.

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CHAPTER I

INTRODUCTION

Background

Any scrutiny of psychological literature reveals a surfeit of hypotheses, frequently contradictory, as to the nature, genesis and resolution of anxiety. Despite this prevailing absence of any real consensus, it is generally assumed that it is a phenomenon which is extremely pervasive and to which most people are susceptible at some stage in their life history (Baughman and Welsh, 1965, p. 419; Lader, 1966, p. 4). The condition may be sporadic or persistent, mild or debilitating and those afflicted may effect successful resolution or tolerance or alternatively suffer incapacitation (Laughlin, 1967, p. 5; Cattell and Scheier, 1961, p. 34).

Nature of Anxiety

The nature of anxiety is sometimes described as an unpleasant emotional state often characterized by such diverse reactions as palpitation of the heart, tremor of the hands, excessive perspiration, neuromuscular and musculoskeletal tension, fatigue, complaints of physical distress, rapid breathing, flushing of the face, vertigo and subjective feelings of excitement and apprehension (Rickles, 1963, p. 4 and 73; Pronko, 1962, pp. 77-125; Coleman, 1964, pp. 196-197). It is only distinguishable from fear on the grounds that there is no rational, identifiable, external source of threat. Some theorists assume that anxiety may also be manifest in more covert, indirect, unconscious forms, exemplified by many of the psychoneurotic and psychotic behavior patterns

(Hutt, Isaacson and Blum, 1966, pp. 156-182).

It is thus apparent that there are psychological, physiological and behavioral concomitants of anxiety. James (1884) and (1885) postulated, independently, that physiological arousal was an essential prerequisite for the subjective experience of emotion (In Plutchik, 1962, pp. 25-26). This position was subsequently discounted by Cannon (1927, 1929) who demonstrated that animals whose autonomic nervous systems had been removed, continued to exhibit behavioral responses indicative of emotional states. In consequence he formulated the hypothesis that physiological arousal and emotional experience occurred simultaneously. According to Cannon this process is mediated by the thalamus and hypothalamus and involves, primarily, an orthosympathetic discharge from the hypothalamus and epinephrine from the adrenal medulla (Marks, 1966, pp. 432-440; Candland, 1962, pp. 71-72). Consonant with this theoretical position is research showing: increased secretion of epinephrine and nor-epinephrine by patients suffering with anxiety, and by healthy subjects after exposure to an anxiety provoking event (Von Euler, 1954, p. 551): induction of various psychological and physiological manifestations of anxiety by the administration of epinephrine (Rickles, 1965, p. 19): secretion of nor-epinephrine by aggressive, actively hostile, angry subjects and of epinephrine by self-effacing, fearful or anxious subjects (Mason, Morgan, Brady, Conrad and Kioch, 1961; Martin, 1961). However Martin (1961) in reviewing the evidence cautions that the data is suggestive but by no means unequivocal and conclusive, whilst Buss (1961) cites an extensive critique of the methodologies used by researchers in this area.

In contrast, the proponents of so-called arousal theory (Malmö, 1959, pp. 367-386; Duffy, 1962) eschew any position positing the existence of specific endocrinological correlates of emotional arousal. Thus Duffy (1961), a recognized exponent of arousal theory, asserts that any emotional condition comprises both a state, which is physiological and nonspecific, and a direction, which is psychological or cognitive. Thus in accordance with this theory there should be no observable distinction between the physiological accompaniments of joy, anger, fear, euphoria, etc., the subjective experience of such states being entirely a function of cognitions arising from the immediate situation. There are a number of experimental findings authenticating this proposition. Thus disparate feelings such as euphoria and anger have been experimentally invoked in subjects who have been injected with epinephrine without any explanation of its bodily effects (Schachter and Singer, 1962, pp. 379-399; Wrightsman, 1960, pp. 216-222). In contrast, informed subjects have proved to be immune to such manipulation (Schachter and Wheeler, 1962, pp. 121-128). Furthermore, rats injected with epinephrine, as opposed to a placebo, and exposed to standard frightening situations exhibited a higher incidence of fear responses (Singer, 1963, pp. 612-615; Latane and Schachter, 1962, pp. 369-372).

Thus despite some recent indication that there may be some sympathetic differentiators (Ax, 1957; Schachter, 1957) it appears that the diversity of emotional states is not paralleled by an equal number of visceral and endocrinological patterns, or if this is the case, these patterns have neither been isolated nor identified (Spielberger, 1966, p. 214).

Origins of Anxiety

The origins of anxiety have been variously postulated in terms of reinforcement biographies (Skinner, 1963): modelling of entire response patterns (Bandura and Walters, 1963): basic anxiety endemic in the familial milieu (Horney, 1937): unresolved infantile sexuality (Freud, 1936): and so on. In spite of these differences it is generally accepted that there are both genetic and environmental determinants of anxiety, although these factors are so inextricably interwoven that it is impossible to quantify, with any degree of precision, the relative contribution of each. Those who subscribe to Freudian tenets stress the primacy of innate instinctual mechanisms, while those of Neo Freudian and Behavioristic orientation emphasize cultural and social factors (Brown, 1961). The most convincing evidence indicating that the predisposition to anxiety is, in part, a function of genetic constellation, is drawn from twin studies. Baller and Charles (1966, p. 166) cite the work of Jost and Sontag (1944) who discovered a definite pattern of relationships between physiological measurements and heredity, arriving at correlations of .49 for monozygotic twins, .26 for dizygotic twins and .16 for unrelated children. Similarly, Gottesman (1963, p. 30) using the anxiety subscale of the MMPI, found correlations of .45 for MZ's and .04 for DZ twins. In a study of psychoneurotic twins of all age groups, Braconi (1961) found concordance in 18 out of 20 MZ pairs and in 9 out of 20 in DZ pairs. Finally Shields and Slater (1960) describe 20 out of 30 MZ pairs as being concordance for neurosis while only 8 out of 32 of the DZ were thus so.

The prenatal environment is also thought to be extremely

significant in the genesis of a predisposition to anxiety. Such deleterious postnatal effects as hyperactivity, excessive bodily movements, disturbances of sleep and gastro-intestinal upsets have been attributed to prenatal emotional stress (Baller and Charles, 1966, p. 57). Experimental work with animals also lends credence to this assumption. The offspring of rats exposed to a conditioned fear stimulus have shown significant differences in behavior from a control group (Thompson, 1963, pp. 47-49). It has also been shown that tranquilizing the mother can produce significant effect on the offspring (Werboff and Haulena, 1962, pp. 163-139).

The studies affirming the crucial role of postnatal experiences are legion. Anxiety, either covert or overt, has been attributed to such environmental effects as child rearing practices (Sears, Macoby and Lewin, 1957, p. 15; Becker, 1964, pp. 509-535; Schaefer and Baylor, 1960, pp. 1-6): maternal deprivation (Harlow and Harlow, 1962, pp. 136-146; Casler, 1961, pp. 1-64): institutionalization (Bowlby 1952, pp. 16-155) and cultural milieu (Barnouw, 1963, pp. 105-119).

Resolution

The theories of anxiety resolution are similarly open to diverse interpretation and include such notions as reordering of reinforcement contingencies (Skinner, 1953): creation of a non-judgemental therapeutic climate, facilitating individual "growth" and "self actualization" (Rogers, 1951): provision of models worthy of emulation (Bandura and Walters, 1962): appeals to logic and rationality (Ellis, 1961): catharsis and abreaction (Freud, 1936): reciprocal inhibition

(Wolpe, 1958). The purpose of the present study is to experimentally validate some aspects of one method of anxiety resolution, namely Wolpian reciprocal inhibition.

CHAPTER II

RELATED LITERATURE

Behavior Therapy

Wolpe's position is representative of behavior therapy, the advocates of which assert that the acquisition, modification and elimination of normal and aberrant behavior can be explained by the laws and procedures of learning. These principles (conditioning, extinction, discrimination, social imitation, etc.) initially established in restricted laboratory settings, by such early and enduring workers as Pavlov, Watson, Thorndike, Hull, and Skinner (Hill, 1962) have been subsequently extended to the realm of human behavior by people like Miller, Dollard, Mowrer, Wolpe, and Bandura (Millon, 1967).

Thus anxiety, invariably maladaptive and inappropriate, can only be explained in terms of the stimulus conditions underlying its expression and not as a function of some "inner personality disorder." Anxiety becomes attached, by a process of conditioning, to neutral innocuous events. Under some circumstances anxiety elicited by certain stimulus events is transferred, by a process of stimulus generalization, primary or secondary, to new stimuli (Wolpe, 1958; Osgood, 1962). Eysenck postulated that when anxiety is manifest in the form of phobic reactions its roots can be traced to some single traumatic event, whereas when experienced as diffuse and "free-floating" is, in all likelihood, a consequence of sub-traumatic events (Eysenck and Rachman, 1965, p. 241). These assumptions are supported by Wolpe and cited by Spielberger (1966):

In neurotic patients, in a large majority of whom a history of the onset of unadaptive anxiety reactions can be obtained, one finds the origin of neuroses always related to a single experience or recurrent occasions of high anxiety (p. 182).

To support this thesis Wolpe cites the clinical findings of Symonds (1943) who discovered a history of anxiety states in 2,000 flying crew members of the British RAF (Spielberger, 1966, p. 182).

In consequence, for the behavior therapists, the resolution of anxiety is effected by manipulating the conditions of learning such that anxious behavior has no reinforcing consequences. This treatment strategy, as opposed to other approaches, is clearly articulated by Staats and Staats (1965).

When an antecedent event has been found to be lawfully related to a consequent event in such a way that manipulating the former changes the latter, an empirical law, which may yield prediction and control has been demonstrated. A learning approach to psychotherapy is based upon these laws, whereas the "mental illness" approach is not. In psychotherapy from a behavioral approach, the treatment objectives constitute the dependent variable. Many other schools of psychotherapy do not specify the dependent variable except in vague terms such as self-actualization, enhancement of ego-strength, achievement of emotional maturity and so on (p. 418).

Wolpian Reciprocal Inhibition

In 1948, Wolpe, drawing extensively upon the work of Pavlov and Hull, supplemented by his own experimentation, devised a means of treating neurotic anxiety by reciprocal inhibition, effected essentially, through the technique of "systematic relaxation" (Berenson and Carkhuff, 1967, p. 244). According to Wolpe (1958) the refractory nature of neurotic anxiety necessitates the introduction of systematic relaxation in its resolution.

If a response antagonistic to anxiety can be made to occur in the presence of anxiety-evoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety responses, the bond between these two stimuli and the anxiety responses will be weakened.

This hypothesis does not deny the possibility that these bonds may be weakened by other means too; but the only other known process by which habits are broken down - experimental extinction - is singularly ineffective when it is anxiety that has to be extinguished.

The poor extinction of anxiety responses is apparently due to (a) the small amount of reactive inhibition generated by autonomic responses, and (b) the reinforcement of the anxiety responses by anxiety drive reduction when the organism is passively removed from the anxiety-evoking stimuli (pp. 71-72).

Wolpe determines for the patient a hierarchy of anxiety provoking stimulus situations on the basis of historical information, interview data, and psychological testing. He then proceeds, by hypnosis and other techniques, to induce a state of relaxation and the patient is encouraged to address himself to the anxiety provoking stimuli, commencing with the least anxiety inducing item in the hierarchy. The patient is thus induced to conjure up a visual image of a 5-8 second duration and then to revert to the state of relaxation. This process is repeated until the stimuli lose their threatening properties. The patient is instructed to indicate, by raising of a finger, if he is incapable of handling the visual images without experiencing anxiety. The state of relaxation experienced purportedly inhibits the expression of anxiety in real life situations (Wolpe, 1958, pp. 140-165).

The work of Wolpe, like that of other behavior therapists has been criticized on the grounds that only surface, superficial symptoms are treated while the "deep-seated" underlying causes remain unresolved. Accordingly, the cure is thought to be short-lived, the underlying

psychic disturbance eventually manifesting itself in other symptoms.

However, Bandura and Walters (1962) point out that symptom substitution only takes place under certain conditions which can readily be obviated:

If the patient has learned relatively few pro-social means of obtaining the rewards or relief which his deviant behavior was aimed at securing, it is always possible that, following the elimination of the deviant responses another set of deviant responses will occur. This outcome can, of course sometimes be forestalled by including in the treatment program procedures designed to elicit, shape and strengthen desirable alternative behavior (Bandura and Walters, 1962, p. 243).

It has been demonstrated that when symptom substitution does occur, the secondary symptoms are more amenable to treatment and their successful resolution invariably precludes any further manifestation (Rachman, 1957; Yakes, 1958). There is a wealth of clinical evidence attesting to the efficacy of Wolpe's methods in effecting long-lasting cures (Wolpe, 1958, pp. 208-220; Lazarus, 1963, pp. 69-79; Bond, 1960, pp. 122-128; Kozma, 1967, pp. 37-40; Friedman, 1968, pp. 75-78; Clark, 1963, pp. 63-68; Wolpe, 1969, pp. 34-37). However, most of this evidence is derived from case studies rather than from carefully controlled experimentation and thus suffers from serious limitations since variables, extraneous to the treatment, are uncontrolled and the appraisal of the patient's status is usually determined by a therapist already committed to the techniques under evaluation. Paul (1966), who compared the relative merits of insight therapy and desensitization, constitutes one notable exception. He divided his subjects into the following groups: (1) those who were treated with desensitization, (2) those treated with attention placebo, and (4) a control group. The success rates were respectively: 85%, 50%, 50%, and 23%.

Evidence gleaned from retrospective studies, though far from conclusive, is highly suggestive. Wolpe followed up 210 neurotic patients who had been treated by reciprocal inhibition and established that with respect to a number of criteria, (symptomatic improvement, increased productiveness, improved sexual adjustment, improved relationships with others and increased tolerance for the usual stresses of life) found that almost 90% were considered "apparently cured or much improved," the average therapeutic time amounting to 10.7 months (Wolpe, 1958, p. 219). Similarly impressive results were reported by Lazarus with 408 neurotic patients. Using reciprocal inhibition 78% were described as "apparently cured" or "much improved". Furthermore of 126 cases of severe neurosis, 62% were thus described with only one relapse over a two year period (Lazarus, 1963, p. 136). A number of experimental studies, though suffering from such defects as small samples, fallibility of patient and therapist ratings or matching procedures, lend confirmation to the assertion that reciprocal inhibition is superior to, or at least as effective as other psychotherapeutic approaches (Eysenck, 1960, pp. 319-324; Cooper et al., 1965, pp. 1222-5; Marks et al., 1965, pp. 561-73; Paul, 1966; Gelder et al., 1967, pp. 53-57).

Garlington and Colter (1968, pp. 247-256) demonstrated the successful application of reciprocal inhibition. His sample of 32 college girls, subject to acute anxiety in testing situations, was divided into two equal groups, each of which was administered two pencil-and-paper anxiety scales before and after the treatment period.

In the course of two sessions the individual members of the experimental group were presented with their hierarchies of anxiety-evoking stimuli while in a state of profound relaxation. In distinct contrast to the control group, the experimental group displayed a significant decrease in anxiety as measured by the two questionnaires and reported diminished anxiety in testing situations.

Cooke (1968, pp. 464-467) divided 50 college students, afflicted with a high anxiety level and a phobic fear of rats, into the following five groups: (1) those desensitized following the traditional procedure, (2) those desensitized without relaxation being stressed during the sessions, (3) those who received relaxation training only, (4) those who participated only in constructing an individual hierarchy, and (5) those who received no treatment. Cooke reported that only the group exposed to traditional procedures and the group desensitized without any stressing of relaxation, experienced any significant improvement.

Paul (1967, pp. 333-348) in a follow up of the study previously reported, discovered no evidence of symptom substitution in his desensitized group. These findings were paralleled by those of a second two-year follow up study (1968, pp. 119-130) with subjects who had been treated by desensitization.

Systematic Relaxation

As mentioned, relaxation procedures constitute an integral part of Wolpian psychotherapy. Relaxation techniques, designed to inhibit anxiety, were first used by Jacobson (1938). He contended that the subjective awareness of such an emotional state was largely a function

of muscle tension and that, accordingly, muscle relaxation would inhibit any experience of emotional arousal. Jacobson (1939, 1940) demonstrated that such autonomic concomitants as pulse rate and blood pressure are significantly depressed by profound relaxation. Subsequently, it has been shown that skin resistance and respiratory rate are similarly affected (Clark, 1963; Wolpe, 1964).

Haugen, Dixon and Dickel (1958) have suggested that some people are subject to chronic persistent muscle tension and over-reaction, probably acquired in early childhood from hypertensive parents given to exhortation and injunction. Such an habitual tendency would have unfortunate consequences:

In a chronically tense animal, straited muscle would be maintained in a state of constant slight tonus. There would be a constant series of stimuli from the tensed muscles to the cortex, presumably via the proprioceptive system. Random and intermittent, constantly changing proprioceptive stimuli, would allow for normal cortical activity, but a persistent bombardment of excessively strong stimuli from chronic bracing of all striped musculature would result in overactivity of the arousal area and culminate in the generation of apprehension, fear and similar phenomena (pp. 20-21).

In support of their hypothesis, they cite the extensive use of mephenesin, mephenesin carbamide and meproamate in the amelioration of anxiety states. Apparently, a number of their patients to whom these drugs have been administered, have reported awareness of muscular tension even though the general effects of the drug were described as pleasant. The inference is that these drugs were effective because their primary function is to block the afferent stimuli before they reach the reticular activating system.

Haugen et al (1958) claim to have resolved phobias, impotence,

frigidity, obsessions and anxiety using relaxation techniques (pp. 44-84 and 92). However, although it is never made explicit, they have made use of desensitization procedures (p. 13) and patients have been encouraged to induce relaxation in progressively more threatening situations.

It has been assumed for a long time that psychological states frequently have somatic manifestations. More recently the notion that the converse also applies has been advanced (Rolf, 1963).

Thus, though body posture and physiology may be, in part, psychogenic, these conditions in turn exert an influence upon subsequent feelings. Lowen and Shultz, acting upon the assumption that emotional problems are manifested in the structure and functioning of the body, assert that relaxation techniques can play a significant role in the resolution of conflict (Shultz, 1967, pp. 25-36).

Thus although the clinical and experimental evidence affirming the efficacy of relaxation procedures in the resolution of anxiety is by no means definitive, it is sufficiently impressive to justify its continued application and research. In consequence it may be hypothesized that the application of relaxation procedures will result in a measurable decrement in anxiety levels.

HYPOTHESES

Specifically stated, in operational terms, the hypotheses are as follows:

1. The experimental group, in contrast to the control group, will exhibit decreased anxiety over the treatment period, as measured by the Willoughby Schedule.
2. The experimental group, in contrast to the control group, will exhibit decreased anxiety over the treatment period, as measured by the IPAT.
3. The experimental group, in contrast to the control group, will exhibit decreased anxiety over the treatment period, as measured by the Galvanic Skin Response.

CHAPTER III

DESIGN AND PROCEDURE

Introduction

The Willoughby Schedule, a measure of what Wolpe terms "persistent unadaptive anxiety reactions" was administered to 105 students in Educational Psychology. On the basis of the responses, an experimental group of 22, approximating the distribution of the larger group with respect to the anxiety measure, and a control group, matched for sex, age and degree of anxiety, were selected. Both groups were then administered a Cattell's Anxiety Scale Questionnaire and Galvanic Skin Response readings were noted. The experimental group was systematically schooled in relaxation techniques during three half-hourly sessions over a three-week interval. At the end of the treatment period the three anxiety measures were administered again.

Sample

The sample comprised 105 students registered in one of a number of sections of an elective course in educational psychology during the 1969-70 session of the University of Alberta. All of them were in their third or fourth year of the education program. The administration of the Willoughby Schedule was conducted during the regular class time but all subsequent testing took place outside the class periods. Participation was on a purely voluntary basis.

Procedure

The method used was a modification of the Wolpian procedures

(Paul, 1966, pp. 118-120). The subject is seated in a comfortable chair, with the experimenter slightly to one side. He is then instructed to assume a position such that the legs are extended, the head resting on the pillow at the back of the chair, and the arms resting on the arms of the chair. No part of the body requires the use of muscles for support. The subject is asked to close his eyes to minimize external stimulation. The procedure is as follows:

(1) The subject is instructed to make a fist with his dominant hand (usually right) and forearm and to tense it until it trembles. His attention is drawn to the tension and discomfort experienced throughout this region. After holding this position for 5 to 7 seconds he is directed to relax and to experience the relaxation as it flows through the tensed muscles until ultimately his hand and forearm feel completely relaxed. At this point the whole process is repeated before moving on to the following muscle groups:

(2) Right biceps

(3) Nondominant (left) hand and forearm

(4) Nondominant (left) biceps

(5) Muscles of the forehead and the top of the head (tensed by frowning heavily

(6) Nose, top of cheeks and upper lip (tensed by wrinkling the nose)

(7) Jaw muscles and cheeks (tensed by drawing back the corners of the mouth)

(8) Chin and throat muscles

- (9) Chest and back muscles
- (10) Abdominal muscles
- (11) Right upper leg
- (12) Right calf
- (13) Toes and arch of foot (tensed by pressing down on the toes and pressing up under the arch)
- (14) Left upper leg
- (15) Left calf
- (16) Left foot

If the subject still experiences any tension anywhere in his body the tension release cycle is repeated for that muscle group.

INSTRUMENTS

The Willoughby Schedule

The Willoughby Schedule measures anxiety relating, essentially, to social situations (Wolpe, 1958, p. 107). The test comprises 25 questions, each of which is answered on a five-point scale on which zero is negative and one to four are positive in increasing degrees. Willoughby (1934) found that out of a group of 262 University students, about 50% of the scores exceeded 20. These findings differ significantly from those of Wolpe who administered the test to 295 neurotic patients (Wolpe, 1958, p. 110). Furthermore Miller (1956) and Siegel (1956), working with a sample of 236 unselected patients observed that 80% gave scores of 30 or over and 94% of 20 or over (Wolpe, 1958, pp. 108-109). These studies lend some support to Wolpe's contention

that this instrument differentiates between people diagnosed as neurotic and those considered to be "normal." Taft's study validating the covariance of irrationality and anxiety indicates that anxiety as measured by the Willoughby Schedule is significantly related to two other paper-and-pencil indices, namely the Maudsley Personality Inventory and the Revised Taylor Manifest Anxiety Scale, and to irrational ideas as measured by Zingle's Irrational Ideas Inventory (Taft, 1968, p. 31). However, the most compelling evidence attesting to the instrument's validity and reliability is derived from its extensive use in clinical practice by psychotherapists using the Wolpian approach. These practitioners have consistently claimed that marked improvement in psychotherapy is paralleled by a significantly diminished Willoughby score (Wolpe, 1958, pp. 139-165).

IPAT Anxiety Scale Questionnaire

Cattell and Scheier (1956, 1957) using techniques of factor analysis, derived 16 personality traits from the four to five thousand items constituting all known personality questionnaires currently in use. Five of these sixteen major personality dimensions apparently form a cluster and are related to the psychiatric evaluation of anxiety (Levitt and Persky, 1962, pp. 458-461; Cattell and Scheier, 1961).

The IPAT Anxiety Scale consists of 40 questions, distributed among the five anxiety measuring factors. Some of these factors (1-20) reveal, what Cattell refers to as, "overt, symptomatic, conscious anxiety" and others (21-40) the more covert, unconscious manifestations (Cattell, 1963, pp. 6-7).

There is a considerable amount of research demonstrating significant correlations between anxiety as measured by the IPAT and other measures, psychological, physiological and behavioral (Cattell and Scheier, 1961). Correlations of 0.3 and 0.4 have been found between psychiatric clinical consensus and IPAT anxiety scores. This is noteworthy given the considerable discrepancy between the individual diagnostic pronouncements of clinicians (Cattell, 1963, p. 8). Furthermore, it has been shown that IPAT scores clearly distinguish between normals and high anxiety cases such as anxiety hysterics and anxiety neurotics (Cattell and Rickles, 1964, pp. 459-465).

The construct validity has been estimated at 0.85 to 0.90 for the total scale, while the reliability scores have ranged from 0.8 to 0.95 (Cattell, 1963, pp. 7-9).

Additionally, there are studies establishing significant correlations with broader personality measures (Kahn et al., 1964, Chap. 13); to tests measuring neurotic trends (Scheier, 1967, p. 9); and to tests directly measuring anxiety and used effectively over a large range of age, educational and cultural levels (Scheier, 1967, p. 9).

Transistorized Psychogalvanometer

Two cylindrical electrode cups, 3/4 filled with a diluted boric acid electrolyte, were inserted into clamps and fastened to the arm of the student's chair about one inch apart. The electrodes were then connected to the phone jacket on the control panel with the cord provided. The subject is seated in a comfortable, relaxed position with both feet on the floor and with the palm of his right hand

downward on the arm of the chair. The subject is instructed to place the index finger in one electrode cup and the fourth finger in the other with the middle finger between the two electrodes. The two fingers should be inserted as deeply as possible without discomfort.

The connections from the meter are inserted into the banana jacks according to the color. With the sensitivity control knob set to "MIN" the button labelled "PRESS TO ZERO I" is depressed as the "TRANSISTOR" switch is turned on. Then the "ZERO I" knob is adjusted so that the meter hand rests approximately at "INSTRUMENT ZERO" when the sensitivity control is fully advanced to "MAX." Before releasing the button, the sensitivity control is returned to minimum. The procedure is repeated (without the use of the button) using the "ZERO 2" control. The Balance control should be near the mid-line and the Range control is advanced slightly and the action of the meter needle carefully noted. If it moves to the left the Range control is moved slowly to the right. By using the sensitivity and the Range controls the setting is adjusted so that the needle rests approximately on "SUBJECT ZERO." At this point the subject should be switched "IN" after having been instructed to remain relaxed and motionless. The room should be reasonably quiet and free from extraneous stimuli. The galvanic skin response takes approximately one second, the maximum reading is recorded.

The Galvanic Skin Response measures the conductivity of the skin and is thus a function of sweat gland activity, which in turn constitutes one operational definition of anxiety (Munn, 1966, p. 323).

Autonomic measures do not suffer from the disadvantages, seemingly inherent in those tests which rely upon inferences drawn from subjective reports. The validity of the latter frequently depends upon the subject's willingness or ability to co-operate (Leiderman and Shapiro, 1964, p. 44). Despite the advantage accruing from the fact that physiological measures are not as readily subject to conscious manipulation or unconscious distortion, there is some evidence to indicate that physiological reactivity tends to be idiosyncratic. Thus physiological measures of anxiety may not necessarily be related to each other, to psychological measures or to the intensity of anxiety (Levitt, 1966, p. 56). Nevertheless, there is a plethora of wide ranging studies in which Galvanic Skin Response measures have proved to be a valid and reliable index of emotional arousal. A heightening of levels of activation as measured by GSR was found among subjects experiencing severe conflict while responding to "conflict-related" words (Fenzo and Epstein, 1962). Using GSR it has been confirmed that physiological covariation is more likely to occur among pair members who have a strong affective (positive or negative) orientation toward each other (Kaplan, 1963). A rise in GSR correlating significantly with interview ratings of anxiety and Affect Adjective List scores, was demonstrated in subjects exposed to total perceptual isolation (eg. darkness and silence) (Zuckerman et al., 1964). There are many other studies, too numerous to permit mention in detail, confirming the relationship between GSR and emotional arousal (eg. Geer, 1967, pp. 253-255; Piokowski, 1967, pp. 279-285; Craig, 1968, pp. 513-520). In

his comprehensive review of the psychological correlates of psychogalvanic deflection, Cattell cites a number of studies demonstrating the significant relationship between GSR and emotionality (Cattell, 1968, pp. 149-170). It has also been reported that under pre-stimulus or rest conditions that neurotics have a slightly higher resistance than normal (Eysenck, 1961, p. 428).

Hence, although it would be somewhat presumptive and imprudent to rely solely upon GSR, as a measure of anxiety, there is sufficient evidence to justify its use in conjunction with other indicators.

CHAPTER IV

FINDINGS AND CONCLUSIONS

Chapter IV essentially constitutes a restatement of the three hypotheses, together with the related experimental findings, derived by standard statistical procedures.

HYPOTHESIS I

The experimental group, in contrast to the control group, will exhibit decreased anxiety over the treatment period, as measured by the Willoughby Schedule.

Findings

There proved to be virtually no differences between the means of control and experimental groups upon the first administration of the Willoughby Schedule, prior to the treatment period. The analysis of variance confirmed that prior to the treatment period there was no measurable difference in the degree of anxiety of control and experimental groups as indicated in Table I.

In distinct contrast, there were significant differences between the means of control and experimental groups upon the administration of the Willoughby Schedule after the treatment period. Analysis of variance procedures revealed that differences on the post-treatment measures were significant at the .01 level (see Table I).

TABLE I

SUMMARY OF DIFFERENCES BETWEEN WILLOUGHBY SCORES FOR
EXPERIMENTAL AND CONTROL GROUPS ON PRE-TREATMENT
AND POST-TREATMENT TESTING

	EXPERIMENTAL				CONTROL				DIFFERENCES	
	N	$\bar{X}$	SD	DF	N	$\bar{X}$	SD	DF	F	P
PRE	22	28.36	11.73	1	22	28.86	13.57	42	0.02	0.8966
POST	22	21.73	9.64	1	22	31.82	14.27	42	7.55	0.0088

As is apparent from Tables II and III, upon the second administration of the Willoughby Schedule, the mean of the control group showed an increment over the value derived from the first administration. On the other hand, observation of the means of the experimental group and the analysis of variance indicated a very significant decrement.

TABLE II

SUMMARY OF DIFFERENCES BETWEEN PRE AND POST
WILLOUGHBY SCORES FOR THE CONTROL GROUP

SOURCE OF VARIATION	SS	DF	MS	F	P
Between People	0.80	21	0.38		
Within People	0.27	22	0.12	11.83	0.002
Treatments	0.96	1	0.96		
Residual	0.17	21	0.81		
Total	0.82	43			

TABLE III

SUMMARY OF DIFFERENCES BETWEEN PRE AND POST WILLOUGHBY
SCORES FOR THE EXPERIMENTAL GROUP

SOURCE OF VARIATION	SS	DF	MS	F	P
Between People	0.47	21	0.22		
Within People	0.65	22	0.30	60.72	0.0000
Treatments	0.48	1	0.48		
Residual	0.17	21	0.80		
Total	0.53	43			

Conclusion

Statistical analysis of the data confirmed that the experimental group, in contrast to the control group, exhibited a significant decrement in anxiety over the treatment period as measured by the Willoughby Schedule.

HYPOTHESIS II

The experimental group, in contrast to the control group, will exhibit decreased anxiety over the treatment period, as measured by the IPAT.

Findings

Observation of mean values and analysis of variance revealed no significant differences between control and experimental groups upon the administration of the IPAT, prior to the treatment period. However,

corresponding analysis of the control and experimental groups performance upon the administration of the IPAT after the treatment period indicated differences significant beyond the .001 level as shown in Table IV.

TABLE IV

SUMMARY OF DIFFERENCES BETWEEN IPAT ANXIETY SCORES FOR
EXPERIMENTAL AND CONTROL GROUPS ON PRE-TREATMENT
AND POST-TREATMENT TESTING

	EXPERIMENTAL				CONTROL				DIFFERENCES	
	N	$\bar{X}$	SD	DF	N	$\bar{X}$	SD	DF	F	P
PRE	22	29.37	9.04	1	22	29.82	10.04	42	0.02	0.8754
POST	22	23.57	8.74	1	22	34.23	11.39	42	12.59	0.009

Observation of the mean values of the control group upon pre and post administration of the IPAT showed an increment, while similar observations with respect to the experimental group revealed a sizable and significant decrement. These results are represented in Tables V and VI.

TABLE V

SUMMARY OF DIFFERENCES BETWEEN PRE AND POST
IPAT SCORES FOR THE CONTROL GROUP

SOURCE OF VARIATION	SS	DF	MS	F	P
Between People	0.45	21	0.21		
Within People	0.59	22	0.27	12.08	0.002
Treatments	0.21	1	0.21		
Residual	0.37	21	0.18		
Total	0.51	43			

TABLE VI

SUMMARY OF DIFFERENCES BETWEEN PRE AND POST IPAT
ANXIETY SCORES FOR THE EXPERIMENTAL GROUP

SOURCE OF VARIATION	SS	DF	MS	F	P
Between People	0.28	21	0.14		
Within People	0.89	22	0.39	17.62	0.0004
Treatments	0.39	1	0.40		
Residual	0.47	21	0.22		
Total	0.37	43			

Conclusion

Statistical analysis of the data confirmed that the experimental group, in contrast to the control group, exhibited a significant

decrement in anxiety over the treatment period as measured by the IPAT.

HYPOTHESIS III

The experimental group, in contrast to the control group will exhibit a decrease in anxiety over the treatment period as measured by the GSR.

Findings

As indicated in Tables VII and VIII the pre and post administration of the GSR revealed a measurable decrement in the experimental group significant at the .02 level. There was no corresponding decrement in the control group.

TABLE VII

SUMMARY OF DIFFERENCES BETWEEN PRE AND POST
GSR SCORES FOR THE CONTROL GROUP

SOURCE OF VARIATION	SS	DF	MS	F	P
Between People	0.61	21	0.29		
Within People	0.65	22	0.29	1.00	0.1730
Treatments	0.56	1	0.56		
Residual	0.59	21	0.28		
Total	0.67	43			

TABLE VIII

SUMMARY OF DIFFERENCES BETWEEN PRE AND POST
GSR SCORES FOR THE EXPERIMENTAL GROUP

SOURCE OF VARIANCE	SS	DF	MS	F	P
Between People	0.33	21	0.16		
Within People	0.16	22	0.70	6.85	0.0161
Treatments	0.38	1	0.38		
Residual	0.12	21	0.55		
Total	0.49	43			

Conclusion

Statistical analysis of the data confirmed that the experimental group, in contrast to the control group, exhibited a significant decrement in anxiety over the treatment period, as measured by the GSR.

CHAPTER V

DISCUSSION AND IMPLICATIONS

DISCUSSION

The results, tabulated and interpreted in the previous chapter, demonstrate that there was a considerable and significant decrement in the level of anxiety as measured by the Willoughby Schedule, the IPAT and the GSR. Moreover this decrement was a function of the application of systematic relaxation procedures in 3 successive half-hour sessions, extending over a period of three weeks. It was also apparent that there was a noticeable increment in the anxiety level of the control group as measured by the three indices. Conjecturally, this may be largely attributed to the fact that all subjects were involved with the completion of term papers and preparation for final examinations at the time of the post-treatment administration of the tests, a condition that lends further support to the effectiveness of the treatment and the design precaution of using a control group.

IMPLICATIONS

As previously indicated in Chapter II, most of the evidence attesting to the efficacy of Wolpian procedures is of a clinical nature rather than that derived from carefully controlled experimentation. Even attempts at the latter have been blighted with methodological difficulties (Beach, 1969, p. 113). The present research is a serious attempt to control the variables extraneous to treatment and

to preclude the bias and distortion conceivably introduced when the research is conducted by those already committed to the orientation under scrutiny. Even Wolpe (1969), one of the leading advocates of behavior therapy and most prominent exponent of desensitization procedures, laments the paucity of controlled experimentation.

In the final analysis, there can be only one rationalization for replacing the present psycho-analytically based systems of therapy: the confidence that behavior therapy is the most efficient way to cure neuroses. So far this evidence is not based upon flawlessly controlled and repeated experimentation.

There have been few rigorously controlled studies demonstrating the effects of relaxation per se in the resolution of anxiety (p. 37).

This study effectively establishes that a state of physiological quiescence can be induced by relaxation procedures and that, furthermore, this condition is antithetical to the subjective experience of anxiety. This is not to say that these procedures constitute some panacea for the resolution of anxiety for every individual or for any degree of intensity, nor is it claimed that relaxation is a necessary and sufficient condition for anxiety resolution of a lasting nature. However, the evidence strongly suggests that these procedures, in many cases, may render the individual more amenable to psychotherapy irrespective of psychotherapeutic orientation. Thus, it seems apparent that the practicing or prospective psychotherapist would be well advised to incorporate these skills into his working repertory. He may use the techniques either to initiate desensitization proper, when deemed appropriate, or merely use the skills to allay initial interview anxiety inducing a pleasant experience conducive to the establishment

of a favorable therapeutic climate.

Larger samples would have permitted a more penetrating examination of the data generated and revealed the extent to which the degree of decrement was a function of initial anxiety intensity and/or personality attributes. It was apparent, during the treatment periods, that many subjects approached, and entered into, the procedures with interest and eager anticipation. On the other hand, a few subjects proved to be somewhat guarded, defensive and sceptical. Although these clinical observations are subjective and unvalidated it seems reasonable to suppose that some personality attributes would impair or obviate responsiveness to deep relaxation and thus preclude this method as an effective means of resolving anxiety. Similarly other personality attributes may be facilitating. It is also a distinct possibility that individuals who typically experience the more overt conscious anxiety will be more highly responsive to relaxation than individuals afflicted with the more covert, unconscious manifestations. Since the IPAT and the Willoughby Schedules purport to measure both kinds of anxiety it should be possible to test out the adequacy of this contention. If some individuals, for the reasons aforementioned, prove to be unsuitable subjects for Wolpian procedures, then other means of anxiety resolution should be investigated and explored. This sentiment is echoed by Eysenck and Rachman (1965) in reference to the techniques of behavior therapy:

We believe that the general failure of psychotherapy to effect cures, a failure which has led many people to abandon the use of this term altogether in connection with mental illness, is not due to the impossibility of achieving cures but rather to erroneous methods of setting about this task (p. xii).

The present author most heartily concurs.

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A P P E N D I X

THE WILLOUGHBY SCHEDULE

Instructions:

The questions in this schedule are intended to indicate various emotional personality traits. It is not a test in any sense because there are no right and wrong answers to any of the questions in this schedule.

After each question you will find a row of numbers whose meaning is given below. Indicate your response on the IBM answer sheet.

A1 means "no", "never", "not at all", etc.

B2 means "somewhat", "sometimes", "a little", etc.

C3 means "about as often as not", "an average amount", etc.

D4 means "usually", "a good deal", "rather often", etc.

E5 means "practically always", "entirely", etc.

- | | |
|---|----------------------|
| 1. Do you get stage fright? | A1__B2__C3__D4__E5__ |
| 2. Do you worry over humiliating experiences? | A1__B2__C3__D4__E5__ |
| 3. Are you afraid of falling when you are on a high place? | A1__B2__C3__D4__E5__ |
| 4. Are your feelings easily hurt? | A1__B2__C3__D4__E5__ |
| 5. Do you keep in the background on social occasions? | A1__B2__C3__D4__E5__ |
| 6. Are you happy and sad by turns without knowing why? | A1__B2__C3__D4__E5__ |
| 7. Are you shy? | A1__B2__C3__D4__E5__ |
| 8. Do you day-dream frequently? | A1__B2__C3__D4__E5__ |
| 9. Do you get discouraged easily? | A1__B2__C3__D4__E5__ |
| 10. Do you say things on the spur of the moment and then regret them? | A1__B2__C3__D4__E5__ |
| 11. Do you like to be alone? | A1__B2__C3__D4__E5__ |

12. Do you cry easily? A1__ B2__ C3__ D4__ E5__
13. Does it bother you to have people watch you work even when you do it well? A1__ B2__ C3__ D4__ E5__
14. Does criticism hurt you badly? A1__ B2__ C3__ D4__ E5__
15. Do you cross the street to avoid meeting someone? A1__ B2__ C3__ D4__ E5__
16. At a reception or tea do you avoid meeting the important person present? A1__ B2__ C3__ D4__ E5__
17. Do you often feel just miserable? A1__ B2__ C3__ D4__ E5__
18. Do you hesitate to volunteer in a class discussion or debate? A1__ B2__ C3__ D4__ E5__
19. Are you often lonely? A1__ B2__ C3__ D4__ E5__
20. Are you self-conscious before superiors? A1__ B2__ C3__ D4__ E5__
21. Do you lack self-confidence? A1__ B2__ C3__ D4__ E5__
22. Are you self-conscious about your appearance? A1__ B2__ C3__ D4__ E5__
23. If you see an accident does something keep you from giving help? A1__ B2__ C3__ D4__ E5__
24. Do you feel inferior? A1__ B2__ C3__ D4__ E5__
25. Is it hard to make your mind up until the time for action is past? A1__ B2__ C3__ D4__ E5__

NAME _____ I.D. NO. _____

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